
NEW OR NOTEWORTHY
ORCHIDS FOR THE
VENEZUELAN FLORA.
VII. ADDITIONS IN
MAXILLARIA FROM THE
VENEZUELAN GUAYANA¹

Germán Carnevali² and Ivón Ramírez²

ABSTRACT

Two new *Maxillaria* species from the Venezuelan Guayana, *M. foldatsiana* and *M. santanae*, are described and illustrated. One highly variable species, *M. auyantepuiensis*, is discussed, and a new subspecific taxon is proposed. *Maxillaria tenuis* is noted as a new record for the Venezuelan flora.

Maxillaria Ruiz & Pavón is the largest genus of the subtribe Maxillarinae, with about 400–450 species ranging from Mexico and the West Indies to southern Brazil. The genus reaches its highest development in the Andes, but Middle America, southern Brazil, the Amazonian Basin, and the Guayanas are well represented. The species of *Maxillaria* usually grow in places of heavy rainfall but often can be found in places with a marked dry season. They grow in almost every vegetation association and at any elevation from sea level to near the snow line but are especially common in rainforest or cloud forests at 500–2,000 m. Most members of the genus are epiphytic, but it is not unusual to find lithophytic or even terrestrial species, particularly in open, humid places. The vegetative morphology is very variable, ranging from tiny plants less than 1 cm high to plants 2 m long. They are usually pseudobulbous, sympodial plants, but pseudobulbless, almost monopodial species are not unknown. Rhizomes may be short, making caespitose plants, but many species have long creeping primary stems; these may be appressed to substrate for their entire lengths or only attached at their bases to the host, making erect, ascendent, or pendulous plants.

Maxillaria is characterized generically by sol-

itary flowers originating from the pseudobulb base or from the internodes of the rhizome (the *Camaridium* alliance). The flowers may be minute to very large and showy and are variable in many respects, although the column is always basally produced into a more or less well-developed column-foot to which the labellum is hinged. *Ornithidium* Salisb. has a rigidly attached, unhinged labellum, and thus we feel it should be recognized, even though many authors do not do so. As a member of the subtribe Maxillarinae, all *Maxillaria* species have four dorsiventrally flattened pollinia in two unequal pairs, more or less well-developed, usually semilunate viscidium, and variously sized and shaped stipites or no stipe at all.

In Venezuela there have been recorded about 75 species of *Maxillaria*, of which 47 are known in the Venezuelan Guayana. All major groups within the genus are represented in southern Venezuela. In terms of numbers of species, *Maxillaria* is only surpassed in the Venezuelan Guayana by *Pleurothallis* R. Br. (ca. 57 species) and *Epidendrum* L. (ca. 51 species). The next-largest genus is *Ocrotomeia* R. Br. (ca. 29 species).

A survey of *Maxillaria* species, associated with the Orchidaceae treatment for Steyermark's *Flora of the Venezuelan Guayana* (Carnevali et al., in

¹ We are grateful to Lic. Bruno Manara for the drawings and criticisms of the Latin diagnoses and to Dr. Julian Steyermark for permitting us to use drawings originally intended for publication in his *Flora of the Venezuelan Guayana*. We also thank Drs. Gustavo Romero, Ernesto Foldats, Gilberto Morillo, and Angel Carnevali for their suggestions and critical reading of the manuscript. We are indebted to Mr. Darko Elakovich for his drawings of *M. santanae*. For crucial access to the orchid collection of the Herbario Nacional de Venezuela (VEN) we thank the staff of the herbarium, especially its curators Dr. Gilberto Morillo and Lic. Libia Laskowski.

² Jardín Botánico de Caracas, Herbario Nacional de Venezuela, INPARQUES, Apartado 2156, Caracas 1010-A, Venezuela. Current address: Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.

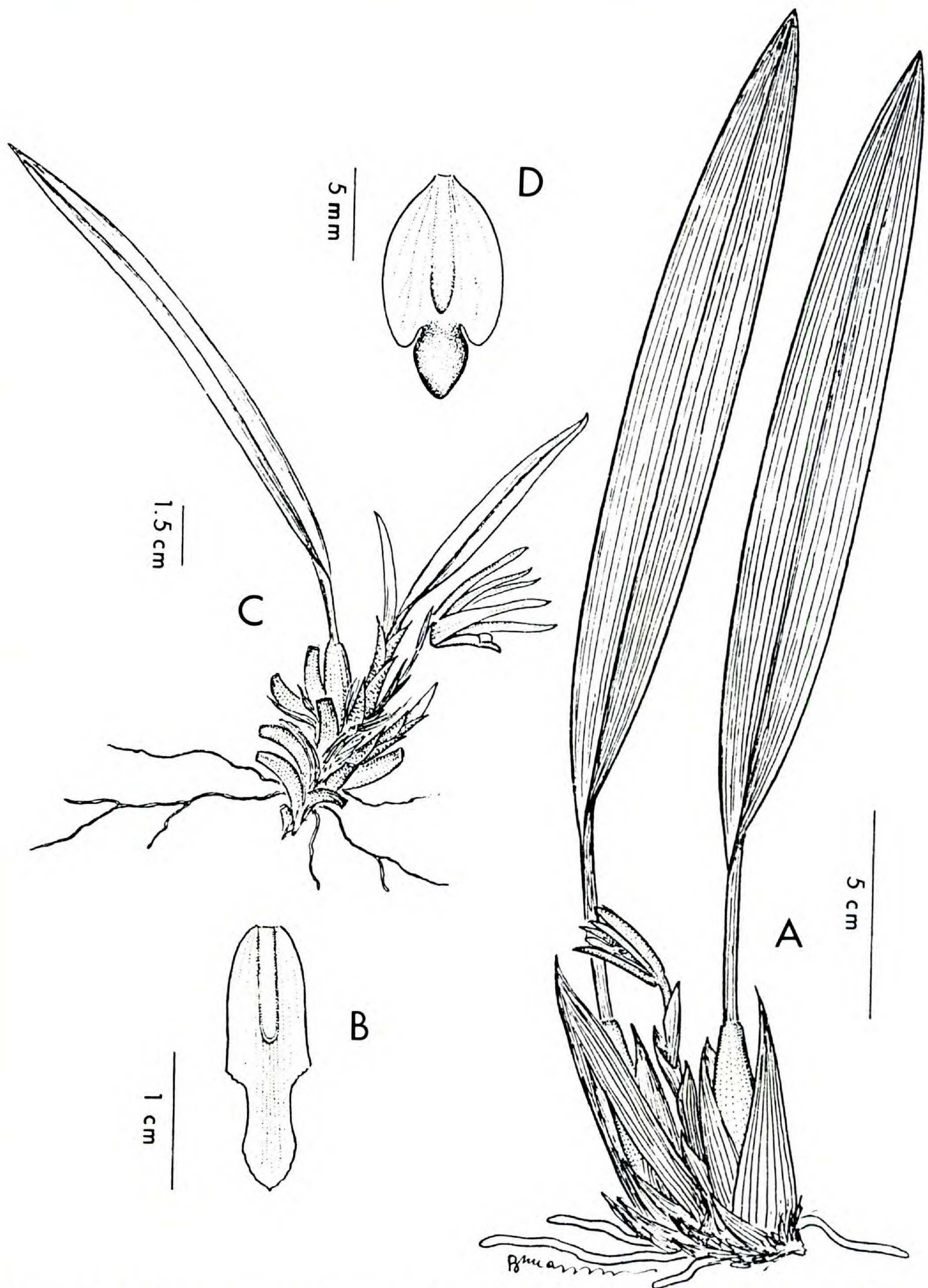


FIGURE 1. A, B. *Maxillaria foldatsiana*.—A. Flowering habit.—B. Labellum, flattened.—C, D. *Maxillaria tenuis*.—C. Flowering habit.—D. Labellum, flattened.

prep.) has revealed: 1) a new subspecies of *M. auyantepuiensis* Fold. and a new species closely related to it, 2) an undescribed taxon in the *Dicrypta* group of the genus, and 3) a new record for the Venezuelan flora, *M. tenuis* C. Schweinf.

THE *MAXILLARIA AUYANTEPUIENSIS* COMPLEX

Our studies of the complex of taxa centered around *M. auyantepuiensis* Fold., which includes *M. desvauxiana* Reichb. f., *M. neophylla* Reichb.

f., and a few others, have revealed a previously undescribed species and a new infraspecific taxon referable to *M. auyantepuiensis*. Here we provide the descriptions of both new taxa.

Maxillaria foldatsiana Carnevali et I. Ramírez, sp. nov. TYPE: Venezuela. Bolívar: Uaipantepui, 1,200 m, *T. Koyama & G. Agostini* 7378 (holotype, VEN). Figure 1A, B.

Species haec *M. auyantepuiensis* affinis, sed differt: labello triplo longiore quam latiore (duplo longiore quam latiore in *M. auyantepuiensis*) et lobulo medio conspicue unguiculato (subsessili in *M. auyantepuiensis*).

Apparently epiphytic, erect herbs, 27–30 cm high. Rhizome abbreviated with aggregated pseudobulbs. Pseudobulbs narrowly ovoid, 4.7–5 cm long, 1.3–1.6 cm wide at their broadest, monophyllous, concealed by appressed, scarious sheaths. Leaves coriaceous, erect, narrowly elliptic, acute, basally attenuate into a subcylindric pseudopetiole 4–4.5 cm long, leaf total length 23–24.5 cm, the blade 18.5–20 cm long, 2.3–2.6 cm wide. Inflorescences originating from the pseudobulb base, flowers solitary; peduncle subterete, entirely concealed by 4–5 tubulose, scarious sheaths, 3–5 cm long. Flowers medium-sized for the genus, apparently vertically erect. Perianth segments scarcely open. Floral bracts elliptic, acute, 1.4–1.5 cm long, 0.4–0.5 cm wide. Pedicellate ovary apparently subcylindric, 15–17 mm long. Dorsal sepal narrowly oblong-elliptic, acute, 20–20.5 mm long, 4–4.5 mm wide. Lateral sepals narrowly triangular, acute, 20–21 mm long, basally 3.5–4 mm wide. Petals narrowly elliptic, slightly obovate, acute or narrowly obtuse, 19 mm long, 4–4.5 mm wide. Labellum parallel to the column, in general outline narrowly oblong, 17–18 mm long, 4.5 mm wide at its broadest, slightly pandurate-trilobate above the middle; central lobe elliptic, obtuse-rounded, slightly concave, 7 mm long, 2.5 mm wide, basally attenuate in a short unguiculus about 2 mm long and wide, the narrowly oblong longitudinal callus apically rounded and centrally concave, 7 mm long, 0.8 mm wide. Column straight or slightly recurvate, hemicylindric, ventrally concave, 8 mm long and 2 mm wide at the thickened apical zone. Clinandrium apiculate.

This species is very similar to *M. auyantepuiensis*, from which it differs in its inflorescences longer than the pseudobulb (vs. subequal or shorter), narrowly elliptic floral bracts (vs. widely elliptic), petals to 4.5 mm wide (vs. at least 6 mm in *M. auyantepuiensis*), and conspicuously narrower labellum

(in *M. auyantepuiensis* it is approximately twice as long as wide vs. more than three times longer than wide in *M. foldatsiana*). Further, the labellum of *M. foldatsiana* is less trilobulate. As *M. foldatsiana* is only known from the type collection, and the differences between the two species are not deep, we feel that more material may show *M. foldatsiana* to be only a variation of *M. auyantepuiensis*. However, we have studied many specimens of *M. auyantepuiensis* (alive and dried) and have never noticed intergradation in the differential characters, so we think that they are best treated as closely related but distinct species.

This apparently scarce species has been collected only once despite repeated collecting trips to the summits of the tepuis in the last ten years. Perhaps it is endemic to Uaipantepui.

We take great pleasure in naming this species after our friend and colleague Dr. Ernesto Foldats, orchidologist. He was the first to notice the new species as undescribed.

Maxillaria auyantepuiensis is very common in the Gran Sabana, in southeastern Bolívar, Venezuela. Surprisingly, it is seldom collected. This species comprises two infraspecific taxa, one of which has remained undescribed.

Maxillaria auyantepuiensis subsp. *auyantepuiensis* is terrestrial or lithophytic, always growing on sandy soils or on acid sandstone, forming large colonies in more or less open places as scrub or savannalike tepui formations. It is usually exposed to full sun or resides under the light shade of shrubs. Occasionally it reaches the gallery forest margin or even its interior, provided there is enough light and is always over sandstone outcrops or sandy soil. Morphologically, *M. auyantepuiensis* subsp. *auyantepuiensis* is highly variable with fusiform to (rarely) spherical pseudobulbs and sessile to long-petiolate leaves. The sheaths that conceal the pseudobulb do not defibrate but remain intact. The inflorescences vary from shorter than to longer than the pseudobulb and are always conspicuously peduncled. The flowers are held in an upright or suberect posture. The perianth segments are relatively long and narrow with petals 18–19 mm long, 4.3–4.5 mm wide (width/length = 0.38–0.42) the dorsal sepal is 20–21 mm long and 3.5 mm wide (width/length = 0.16–0.17).

Maxillaria auyantepuiensis Fold. subsp. **epiphytica** Carnevali & I. Ramírez, subsp. nov. TYPE: Venezuela. Bolívar: bosque húmedo en las vacinidades del km 119 al sur de El Dorado, 130 m, 12 Jan 1964, *J. A. Steyermark*,

TABLE 1. Characters distinguishing subspecies of *M. auyantepuiensis*.

Characters	Subspecies	
	<i>auyantepuiensis</i>	<i>epiphytica</i>
Substrates	Sandy soil or sandstone outcrops	Epiphyte on trees
Habitats	Various tepulike associations	Rain and cloud forest
Pseudobulb sheaths	Intact	Defibrating
Pseudobulb shapes	Spherical to ellipsoid	Spherical
Leaves	Sessile to long-petiolate	Always long-petiolate
Flowers	Erect to suberect	Spreading horizontally
Petals length × width	18–19 × 4.5 mm	15–16 × 5 mm
Width/length	0.42–0.45	0.30–0.38
Dorsal sepal length × width	20–21 × 3.5 mm	16–17 × 4.5–5 mm
Width/length	0.16–0.17	0.27–0.31

G. C. K. & E. Dunsterville 92993 (holotype, VEN).

Subsp. haec subsp. *auyantepuiensis* vaginis dissolutis, tepalis proportione latioribus differt itemque habitu epiphytico et in silvis pluvialibus incola.

The subspecies are distinguished in Table 1. Both subspecies have been illustrated in Dunsterville & Garay (1965: 181, 498). Plants A, C, and D there depict the variation to be expected in *M. auyantepuiensis* subsp. *auyantepuiensis*. Plant B represents our new *M. auyantepuiensis* subsp. *epiphytica*.

The new subspecies comprises populations of epiphytic plants from rain or cloud forest at variable altitudes from 600 to 1,400 m, with spherical or broadly ellipsoid pseudobulbs that are small in proportion to leaf length and are concealed by defibrating sheaths. These pseudobulbs occur on a short to long, obviously creeping rhizome, which adheres to the bark of the host tree. The leaves are always long-petiolate and very elongate with respect to pseudobulb length. The almost-epedunculate inflorescences are always shorter than the pseudobulbs, and the flowers are almost held horizontally. The flowers are of proportionately smaller dimensions than in subsp. *auyantepuiensis*, with relatively broader perianth segments (dorsal sepal 16–17 mm long, 4.5–5 mm wide (width/length 0.27–0.31). The labellum is almost identical in the two subspecies.

Maxillaria auyantepuiensis subsp. *epiphytica* is superficially similar to the Ecuadorian species *M. neophylla* Reichb. f., but this has an acute central labellum lobe. The new subspecies also suggests a vegetatively reduced *M. desvauxiana* Reichb. f. from the Amazonian Basin, but their labella are very different, and *M. desvauxiana* does not have defibrating sheaths concealing the pseudobulbs.

The new subspecies has a wider distribution than the typical subspecies and extends beyond the Guayana boundaries. We know of a population in Guatopo, Estado Miranda, of the Coastal Range, represented by *Patrszeck s.n.*, 13 Feb. 1963 (VEN), also a population from Barinitas, Estado Barinas, in the Andean foothills, from which we have living material but no voucher.

The typical subspecies appears to be restricted to the acid sandy soils of the Roraima Formation, and this may explain a limited range in geographic terms even though it appears to be locally abundant in its natural habit.

Paratypes. VENEZUELA. BOLÍVAR: Selva húmeda con árboles de un promedio de 25–30 m de altura en el drenaje del Río Cuyuní, km 140–141.5 al sur de El Dorado, 1,300–1,380 m, 22–28 Dec. 1970, *J. A. Steyermark, G. C. K. & E. Dunsterville 104324* (VEN); Cerro Guaiquinima, Río Szczerbanari (Río Carapo), 750 m, 20–25 Jan. 1977, *J. A. Steyermark, G. C. K. & E. Dunsterville 113219* (VEN). MIRANDA: Guatopo, 13 Feb. 1963, *Patrszeck s.n.* (VEN) (Colección en líquido *Dunsterville 252*).

Study of the *Dicrypta* group of the Venezuelan Guayana has revealed an apparently undescribed taxon:

Maxillaria santanae Carnevali & I. Ramírez, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: Departamento Atabapo, Cerro Marahuaca, porción central. Bosque con árboles hasta 20 m, aprox. 1,000 m. Floración en cultivo en el orquideario del colector, 11 Nov. 1986, *G. Santana 1* (holotype, VEN). Figure 2.

Species haec *M. crassifoliae* et *M. superfluae* affinis sed species nostra habito conspicue parviore, petalis et labello proportione latioribus et labello unicalloso cinnabarino vel cinnabarino-roseo lobo centrali late triangulari discrepat.

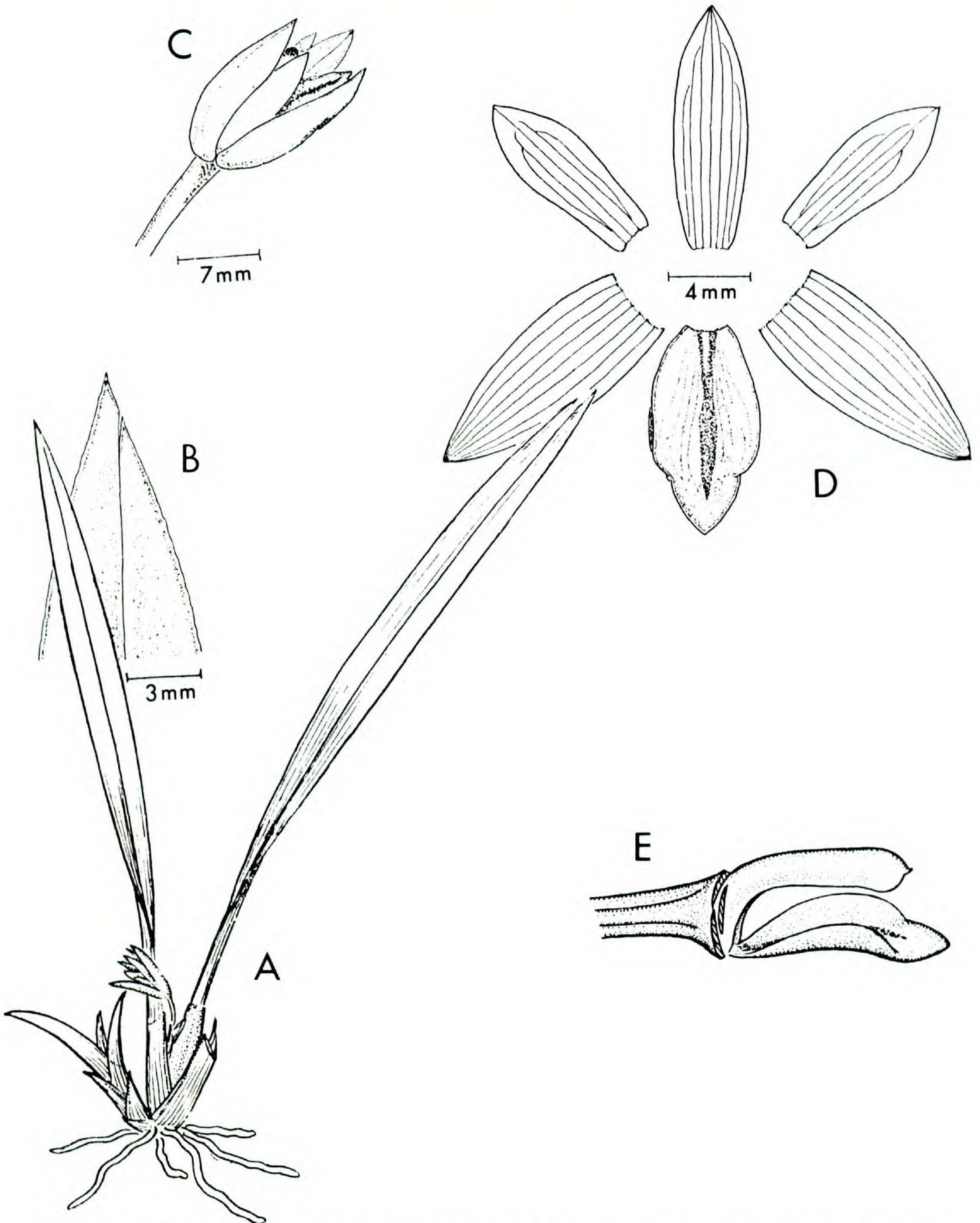


FIGURE 2. *Maxillaria santanae*. —A. Flowering habit. —B. Foliar apex. —C. Lateral view of flower at anthesis. —D. Perianth segments, flattened. —E. Labellum and column.

Small to medium-sized, epiphytic, caespitose, erect herbs, 11–23 cm high. Rhizome short and proportionately thick, entirely concealed by scarious sheaths. Roots proportionately thick and long, pale brown. Pseudobulbs aggregate, ovoid-ellipsoid,

uncipital, 2.1–3 cm long, 0.6–1 cm wide, apically unifoliate, clothed with 4–5 sheaths, the innermost 2–4 of these with foliar blades, the blades falling after 2–3 years of growth, leaving the sheaths persisting and becoming grayish brown in fresh or

dry condition. Leaves fleshy-coriaceous, erect or patent-erect, the outer leaves 10–15 cm long from the articulation, the apical leaf 14–21 cm long, 7–10 mm wide when fresh, 5–9 mm wide when dry, basally attenuate and forming a pseudopetiole 1–2.3 cm long, the blade apex acute and deeply obliquous-bilobulate (one of the halves of the blades 2–4 mm longer than the other). Inflorescences one-flowered, originating from the leaf-sheath axils one at a time. Peduncle subterete, fleshy, 17 mm long, concealed by 3–5 subimbricate, distichous sheaths. Floral bract similar to the peduncle bracts, narrowly triangular, acute, membranose, 6 mm long, 2.5–3 mm wide. Pedicellate ovary subterete, 9–10 mm long, 2.5 mm thick. Flowers medium-sized, campanulate, erect or suberect; perianth segments fleshy, subparallel to the column, greenish yellow, the petals with or without a few small brown-orange dots, the labellum pale orange or rose-lilac with orange-brown basal patches and a salmon-colored, tomentose callus. Sepals elliptic-oblong, acute; the laterals slightly obliquous, 11–13 mm long, 4–5 mm wide, with a dorsally thickened apex. Petals narrowly obovate-elliptic to narrowly elliptic, subfalcate, acute, 10–10.5 mm long, 2.7–3.2 mm wide. Labellum basally articulate with the column-foot, in overall shape elliptic, subtrilobate about the apical fourth, 9–9.5 mm long, 5–5.5 mm wide between the margins of the lateral lobes; lateral lobes suberect and making a concave labellar disc; central lobe broadly ovate or broadly triangular obtuse, 3.8–4 mm long, 2.8–3.2 mm wide, fleshier than the rest of the labellum and with a central concavity originating where the callus ends, the disc with a thickened, waxy, tomentous longitudinal callus, this 6–7 mm long, 1 mm wide. Column semiterete, slightly thickened, apically arcuate, 6.5–7 mm long; column foot 2–3 mm long. Anther subconic, 2 mm long, obtuse, the basal margins erose.

Paratypes. VENEZUELA. BOLÍVAR: confluencia del Caño Makarupai con el Río Akaruai, unos 10–15 km al SO de la Misión de Wonken, ca. 850 m, en bosque macrotermico medio/medio, caracterizado por una gran abundancia de epífitas debido a los rápidos de la confluencia. Floración en cultivo, Maracay, 2 Jan. 1984, *G. Carnevali 1445* (VEN).

This relatively scarce species has a wide range within the Venezuelan Guayana. One of the authors collected living plants of it in 1982 in the surroundings of Peray-tepui (W of Sta. Elena de Uairén, Gran Sabana, Estado Bolívar), but no voucher was made. The affinities of *M. santanae* lie with all the species of the *Dicrypta* group: *M. crassifolia* Reichb. f.; *M. superflua* Reichb. f., and per-

haps *M. bicallosa* (Reichb. f.) Garay, *M. charactifolia* Ames, and others. This is a difficult group in need of revision—the characters distinguishing the component members are not well defined and seem unreliable. Among the *Dicrypta* group, *M. santanae* can be easily recognized by its small vegetative stature; very narrow leaves; broadly ovate or broadly triangular, obtuse central labellum lobe; and orange-yellow or rose-lilac labellum, which has a callus in the disc and lacks another in the central lobe as is usual in other species of the group.

We are pleased to name this species after Dr. Gustavo Santana, an enthusiastic orchid collector and knowledgeable amateur orchid grower. He collected the living plant from which the holotype specimen was prepared and kindly provided fresh vegetative and floral material for study.

Maxillaria tenuis C. Schweinf., Bot. Mus. Leaflet 11: 289, T. 18, fig. 1, c–d. 1945. TYPE: Perú. Loreto: Mishuyaco, near Iquitos, 100 m, in forest, *Klug 1045* (holotype, US). Figure 1C, D.

Small to medium-sized epiphytic herbs. Rhizome abbreviated. Pseudobulbs cylindrical, ellipsoid or oblongoid, apically unifoliate, 1.5–2.3 cm long when mature, 5–7 mm wide, concealed by oblong-ovate, acute, and acuminate sheaths, these verruculose without, the innermost bearing leaf blades. Leaves coriaceous, 11–14 cm long, 6–8 mm wide, the blades linear, acute, the base attenuate into a short pseudopetiole 3–15 mm long. Inflorescences erect, 1-flowered, solitary, originating from the base of the young pseudobulbs. Peduncle subterete, 1.5–3.2 cm long, concealed by 2 elliptic, acute, acuminate sheaths, these verruculose without, 8–11 mm long, slightly longer than internodes. Floral bracts almost identical to the last peduncle bract, 9–11 mm long, about 6 mm wide. Pedicellate ovary subterete, longitudinally sulcate, verruculose, 11–12 mm long. Flowers medium-sized but large for the plant, with white tepals and a yellow and white labellum having purple nerves. Perianth segments subcoriaceous, parallel to the column. Dorsal sepal very narrowly elliptic, acute and acuminate, concave basally, 18–27 mm long, 3–4 mm wide. Lateral sepals narrowly oblong to linear-lanceolate, acuminate, slightly obliquous, 18–27 mm long, 4 mm wide basally, decurrent on the column-foot and forming with it a short mentum. Petals linear-lanceolate, acuminate, 16–23 mm long, 2–2.3 mm wide. Labellum fleshier than the other perianth segments, broadly elliptic to elliptic-ovate overall, trilobate near the apical third, 9.5–10 mm long

between the apices of the extended lateral lobes, 5–6 mm wide; lateral lobes erect and narrow, ending in a free ovate-rounded portion about 1 mm long with the apical margins minutely erose; central lobe very fleshy, 3.5–4 mm long, 2.5–3 mm wide, triangular ovate, acute or obtusate, minutely apiculate subapically, the ventral face rugulous-papillose and longitudinally sulcate. Disc along its entire length with an oblongoid callus, 5–6 mm long, with an apically rounded surface. Column proportionately short, about 4.5 mm long, semiterete, basally produced into foot about 2 mm long.

Additional specimen examined. VENEZUELA. TERRITORIO FEDERAL AMAZONAS: surroundings of San Carlos de Río Negro, on the road to Solano, 100–120 m, Dec. 1986, H. L. Clark 8098 (VEN).

Distribution. Known from the rain forests between 80 and 200 m in the Amazonian Basin of Peru, Brazil, and Venezuela.

This is the first record of this species for Venezuela. Since the Venezuelan material shows a few differences with the other known populations, here we offer a complete description with the full range of variation. *Maxillaria tenuis* seems to be rather variable. The type material from Iquitos, Amazonian Peru (Klug 1045, US), has sepals about three times longer than labellum (27:9.5 mm) and a triangular-ovate central labellar lobe. The second collection known, collected in Amazonian Brazil (G. A. Black 48-2676, IAN; G. A. Black 48-2747, IAN), has a very narrow central lobe (half the width of the type material) and an apparently bilobed labellar callus. Based on this Brazilian material, a var. *amazonica* Pabst was described (Pabst, 1955). All persons experienced with *Maxillaria*

herbarium material know how difficult it is to rehydrate and reconstruct labella in these species, especially the central lobe and calluses, so we wonder if the narrower central lobe and bilobed callus are not artifacts. Provided they are not, we would think that var. *amazonica* could stand as a good variety or subspecies, even though in Pabst & Dungs (1975) they seem to have rejected Pabst's variety without explanation. The third population of the species to be sampled is the one we report here, which seems to depart from the type and from Brazilian material in having shorter sepals, less than two times longer than labellum (18:10 mm). The labellum is identical with that of the type material. By orchid standards this seems to be a good difference for the recognition of at least a subspecies, but we feel that the evidence is too scanty, as is the known material, and further material could bridge the gap between the three known populations of this extremely variable species.

Maxillaria tenuis is a well-marked species, especially its vegetative morphology: oblongoid, elongate pseudobulbs, linear leaves, and verrucose-pustulose sheaths. San Carlos de Río Negro is only a hundred meters away from Colombia, across the Río Negro, so we would expect to find *M. tenuis* also in Colombia.

LITERATURE CITED

- DUNSTERVILLE, G. C. K. & L. GARAY. 1965. Venezuelan Orchids Illustrated, III. Andre Deutsche, London.
 PABST, G. 1955. As orquideas do Herbario do Instituto Agronomico do Norte. Arq. Bot. Estado São Paulo 3: 132–133, T. 34-B.
 ——— & F. DUNGS. 1975. Orchidaceae Brasiliensis 2: 183–187.